PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Body height in adult women and men in a cross-sectional population-based survey in Geneva: Temporal trends, association with general health status, and height loss after age 50
AUTHORS	Schäppi, Julia; Stringhini, Silvia; Guessous, Idris; Staub, Kaspar; Matthes, Katarina

VERSION 1 – REVIEW

REVIEWER	Vrettos, Ioannis General Oncology Hospital of Kifisia - Agioi Anargiroi
REVIEW RETURNED	27-Dec-2021

GENERAL COMMENTS	This manuscript investigates whether the slowdown in height increase in recent decades has affected all subgroups of the Geneva population, whether height was associated with self-assessed health status and whether and to what extent the Geneva population was affected by height loss. The manuscript has shown the basic information about the study, but still needs more revision. The authors did not really discuss many of the findings of their study, nor the significance of knowing if a slowdown in height increase has affected all subgroups, or of knowing if height was associated with self-assessed health status. The reader would want to know more about the interpretation of the results and the reason that may be important when studying height loss, slow down on height increase, or associations between height and self-assessed health status. I have several suggestions for the consideration. Introduction Page 3, lines 37-40: “One of the few studies assessing this topic investigated the connection between height and socio-economic background characteristics in Moroccan and Turkish children living in the Netherlands [18]”. What are the results of this study? Materials and methods Page 4, line 53: authors were stated that “Each participant brought their completed questionnaires to one of the two study centers” and “questionnaires checked for correct completion by trained interviewers”. However, from the study sample (10585 persons), 1.749 persons were excluded because self-rated health status was not stated, 1.442 persons were excluded because parents place of birth was not stated, 125 persons were excluded because education level was not stated and 18 persons were excluded because number of siblings was not stated (supplementary figure S1). Is there any explanation for this controversy?

	Page 4, line 54: authors stated that “a comprehensive health assessment” of study participants “was performed”. Why when they analyzed their data favor to include the subjective self-rated state of health and not the objective state of health deriving from the “comprehensive health assessment”? Results Page 7, line 23: Why “participants born before 1932” and those “with a height<140 cm (n=24), >210 (n=8)” were excluded from the study? It needs clarification. Page 7, lines 27-32. Means and SDs were referred for age and height. It is not mentioned lately if the height and age had normal distribution. Page 7, line 34. “Women were slightly less likely to report secondary or tertiary education (43.2% in women vs. 47.0% in men)”. Is it statistically significant? Discussion Page 9, line 2-3: “Migration background and year of birth were the most important explanatory factors for height, followed by education level”. It must be stated if there is any explanation for these results and what has been referred in previous studies. What is the practical implication of knowing that migration background, year of birth and education level were the most important explanatory factors for height? Page 9, line 10: among the main findings of the study is that “taller height was an important cofactor in explaining better self-rated health status”. This finding is not commented in discussion section. Is there an explanation for this phenomenon? has it been mentioned in previous studies? has any possible interpretation been suggested? does this result agree with the objective state of health? In general, in discussion it should be discussed what is the significance of the results and what is their practical value, or in other words, how they can be used on a practical level.

REVIEWER	Das Gupta, Rajat BRAC University James P Grant School of Public Health
REVIEW RETURNED	10-Jan-2022

GENERAL COMMENTS	This is a well written manuscript. I have a comment: the authors "In terms of cofactors with relevance for height research, we used the nationality of the participants' parents to classify their migration background into six large groups: Central European (which also includes people with a Western European migration background), Southern European, Eastern European (which also includes people with a Southeast European migration background), South American, African and Asian." What about parents of mixed ethnicities (i.e.:father from one region and mother from another)?

VERSION 1 – AUTHOR RESPONSE

Reviewer Number 1

Comments to the Author:

This manuscript investigates whether the slowdown in height increase in recent decades has affected all subgroups of the Geneva population, whether height was associated with self-assessed health status and whether and to what extent the Geneva population was affected by height loss. The manuscript has shown the basic information about the study, but still needs more revision.

[B1] The authors did not really discuss many of the findings of their study, nor the significance of knowing if a slowdown in height increase has affected all subgroups, or of knowing if height was associated with self-assessed health status. The reader would want to know more about the interpretation of the results and the reason that may be important when studying height loss, slow down on height increase, or associations between height and self-assessed health status.

Answer: Thank you very much. We agree and have decisively expanded the discussion in the directions mentioned. See also our responses to the specific points below.

I have several suggestions for the consideration.

[B2] Introduction, Page 3, lines 37-40: “One of the few studies assessing this topic investigated the connection between height and socio-economic background characteristics in Moroccan and Turkish children living in the Netherlands [18]”. What are the results of this study?

Answer: Thank you, we have added to the sentence to make it clear what this study showed.

[B3] Materials and methods. Page 4, line 53: authors were stated that “Each participant brought their completed questionnaires to one of the two study centers” and “questionnaires checked for correct completion by trained interviewers”. However, from the study sample (10585 persons), 1.749 persons were excluded because self-rated health status was not stated, 1.442 persons were excluded because parents place of birth was not stated, 125

persons were excluded because education level was not stated and 18 persons were excluded because number of siblings was not stated (supplementary figure S1).

Is there any explanation for this controversy?

Answer: Thank you for this good question. The main reason is that answering the questions in the questionnaire was voluntary at any point in the study. In most of these missing answers, the participants did not want to answer the question, for which reasons must remain open. This is despite the fact that the study staff checked the questionnaires upon receipt. Or even they could not answer because they did not know, for example in the case of the parents' place of birth. We have added this information to the description of the data, and slightly adjusted the wording in the sentence quoted above (from "correct completion" to "correct filling") to avoid misunderstanding.

[B4] Page 4, line 54: authors stated that "a comprehensive health assessment" of study participants "was performed". Why when they analyzed their data favor to include the subjective self-rated state of health and not the objective state of health deriving from the "comprehensive health assessment"?

Answer: Thank you for this important question. The reason we chose the general self-assessment rather than the manifold individual medical examinations and measurements for this present study is that it is challenging to construct a summary health statement from these individual examinations. Also, more detail would have to be given to the individual medical examinations, which would have been beyond the scope of this manuscript. We already point this out in the limitations paragraph in the discussion (third point), but have made this point even clearer in the description of the variables and the limitations paragraph of the discussion. Future studies should definitely look at the association between body height and individual or multiple of these medical examinations.

Results

[B5] Page 7, line 23: Why "participants born before 1932" and those "with a height<140 cm (n=24), >210 (n=8)" were excluded from the study? It needs clarification.

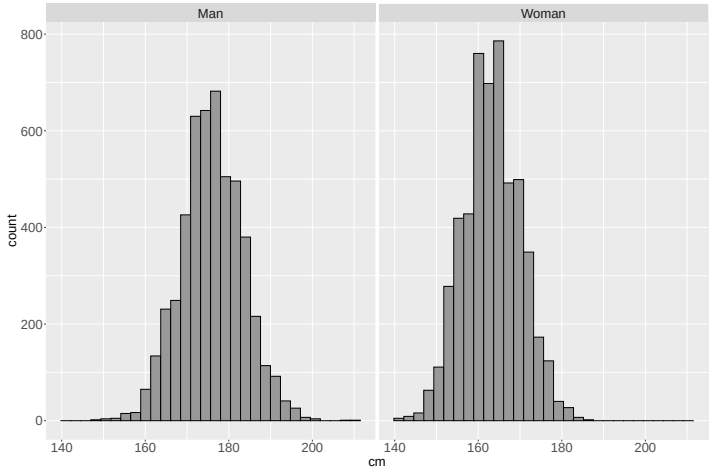
Answer: Thank you. In the case of birth years, the sample size of those born before 1932 was simply too small (N=14 or 0.16%) to allow reliable estimates as a separate ten-year subcategory. In the case of height, this is a standard

procedure in the anthropometric literature because in any larger data set on body heights there are values that are unrealistic due to input errors. In participants with a height smaller than <140 (N=24) these are participants with unrealistically small values (average 80cm, Range: 16.3 cm to 133.0 cm). In participants with a height larger than >210 (N=8) these are participants with unrealistically large values (average 590cm, Range: 267.0 cm to 795.1 cm). We have included this information in the appropriate place in the main text.

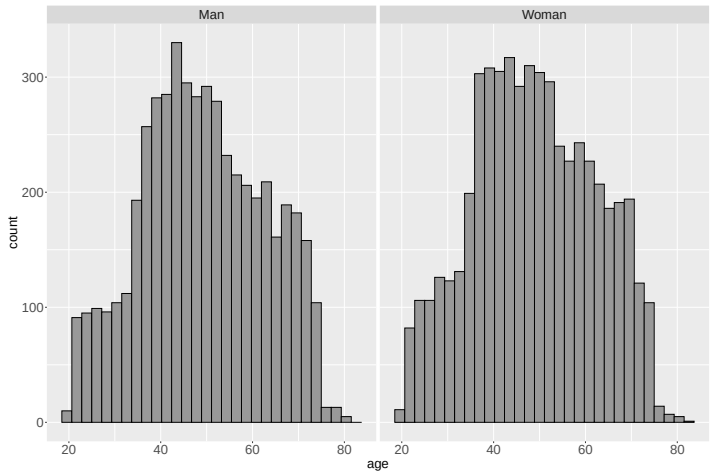
[B6] Page 7, lines 27-32. Means and SDs were referred for age and height. It is not mentioned lately if the height and age had normal distribution.

Answer: Thank you very much. That is an important point. The histograms for the two variables are inserted below and the impression is as expected. Body height is more or less symmetrically distributed for both sexes, age is not. The latter is also as expected, and according to the methods used, age as an independent variable is not necessarily supposed to be symmetrically distributed.

Histogram for height:



Histogram for age



We have included these two new Figures as Supplementary Material and refer to the height histograms in the main text.

[B7] Page 7, line 34. “Women were slightly less likely to report secondary or tertiary education (43.2% in women vs. 47.0% in men)”. Is it statistically significant?

Answer: Thank you for this question. Yes, the difference is significant when using a chi-square test ($p < 0.005$). We have added this information in brackets in the corresponding place.

Discussion

[B8] Page 9, line 2-3: “Migration background and year of birth were the most important explanatory factors for height, followed by education level”. It must be stated if there is any explanation for these results and what has been referred in previous studies. What is the practical implication of knowing that migration background, year of birth and education level were the most important explanatory factors for height?

Answer: Thank you for this important advice. We have expanded the corresponding passage in the discussion (2nd paragraph) in this direction.

[B9] Page 9, line 10: among the main findings of the study is that “taller height was an important cofactor in explaining better self-rated health status”. This finding is not commented in discussion section. Is there an explanation for this phenomenon? has it been mentioned in previous studies? has any possible interpretation been suggested? does this result agree with the objective state of health?

Answer: Thank you for these points. We have expanded the corresponding part of the discussion and now offer more context in a newly added fourth paragraph.

[B10] In general, in discussion it should be discussed what is the significance of the results and what is their practical value, or in other words, how they can be used on a practical level.

Answer: Thank you, we have tried to take this into account when revising and complementing the discussion and other parts of the manuscript (see our answers to the specific comments above and our additions to the manuscript).

C) Reviewer Number 2

Comments to the Author:
This is a well written manuscript.

[C1] I have a comment: the authors "In terms of cofactors with relevance for height research, we used the nationality of the participants' parents to classify their migration background into six large groups: Central European (which also includes people with a Western European migration background), Southern European, Eastern European (which also includes people with a Southeast European migration background), South American, African and Asian." What about parents of mixed ethnicities (i.e.: father from one region and mother from another)?

Answer: Thank you for this important question. The number of these mixed connections between father and mother was relatively small (n=831 or 9.6% of the total n=8,696 participants outlined in Table 1). This becomes an issue especially if further subcategories have to be made with the different regions of origin, and then additionally differentiated according to both sexes. This would result in a total of 37 subcategories and combinations with small sample sizes, which would not permit any reliable estimates. That is why we decided to proceed as described above. We have added more information about the reasons for our procedure at the appropriate place in the manuscript.

VERSION 2 – REVIEW

REVIEWER	Vrettos, Ioannis General Oncology Hospital of Kifisia - Agioi Anargiroi
REVIEW RETURNED	13-Mar-2022

GENERAL COMMENTS	All modifications were made according to the suggestions of the reviewers. It is a really interesting and useful research that adds to the existing literature.